Trend Study 1-17-01

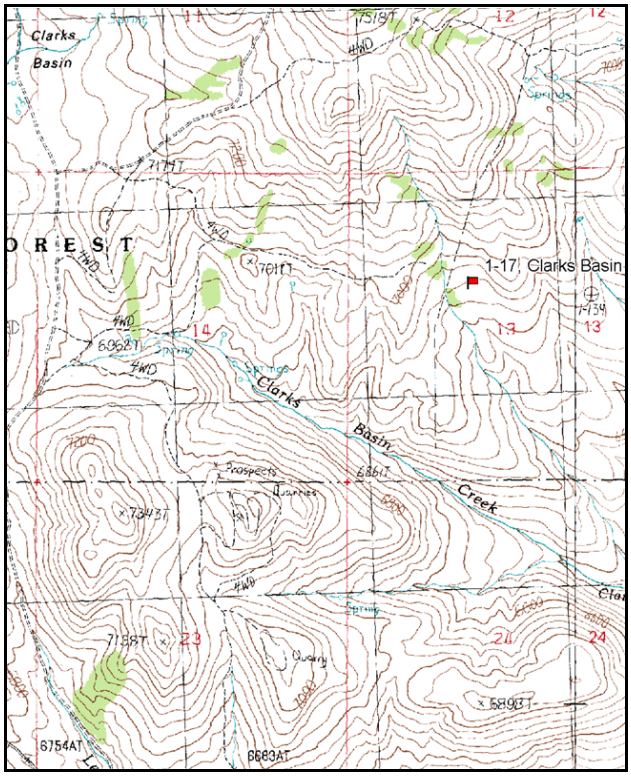
Study site name: Clark's Basin . Vegetation type: Mountain Brush .

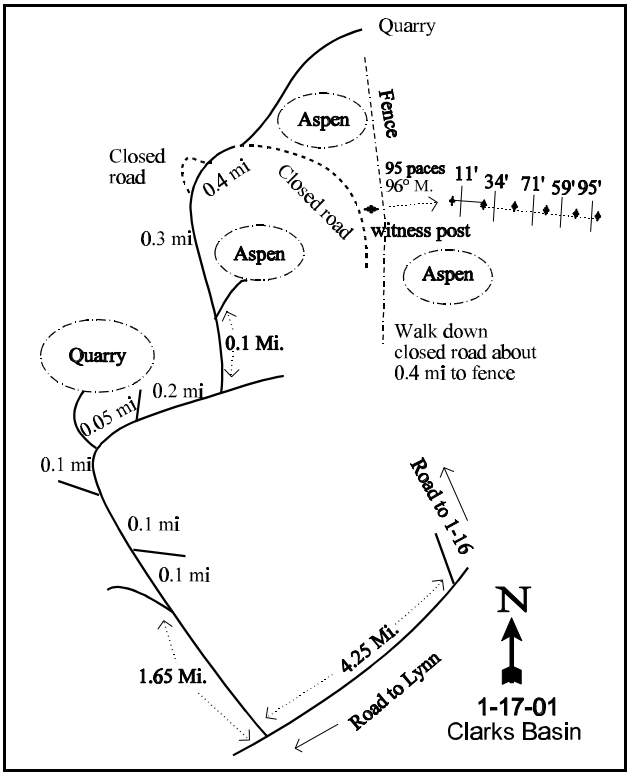
Compass bearing: frequency baseline 100 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

LOCATION DESCRIPTION

From U-30, travel up the road towards Lynn to Clark's Basin for 13.05 miles.. Take a right and drive 1.65 miles to a fork in the road. Stay right and continue for another 0.35 on the main road to a quarry. Stay right and continue for 0.2 miles. Take a left, proceed 0.1 miles taking a left and proceed 0.3 miles to a wet meadow and a spring where the road has a been moved. Go through the stream and continue 0.4 miles to a spot where the road has been closed. From here walk down the hill on the old closed road about 0.4 miles to a witness post near the fence. From the witness post, walk 95 paces at a bearing of 96 degrees magnetic to the 0-foot baseline stake marked by browse tag #443. The baseline runs 100 degrees magnetic.





Map Name: Lynn Reservoir Diagrammatic Sketch

Township 13N , Range 16W , Section 14 UTM 4636539 N, 281537 E

DISCUSSION

Trend Study No. 1-17

The Clark's Basin study is a new study established in 1996. It is placed to sample mixed mountain brush near one of the few aspen clones in the Clark's Basin area. It is considered important fawning habitat for deer. The site is on a bench with a ridge to the north and ravines to the south. The site is on a gentle 3% to 5% slope at an elevation of approximately 6,740 feet. This area is grazed by livestock as part of the Yost Pasture allotment. Season of use is May 1 to June 20 and November 1 to December 31 by 1,206 cattle. Water is readily available in nearby springs and livestock water developments. A pellet-group transect read on site in 2001 estimated 34 deer days use/acre (84 deer days use/ha) and 2 cows days use/acre (5 cow days use/ha).

The soil is relatively deep with some surface rock. Soil texture is a clay loam with a neutral reaction (6.8 pH). Effective rooting depth is a little over 20 inches. Erosion is not a problem due to the abundant herbaceous cover and little exposed bare soil. The erosion condition was classified as stable in 2001.

The site is a mixed mountain brush type with a good grass and forb understory which can provide important early summer forage for deer. Several preferred browse species occupy the site including: serviceberry, black sagebrush, basin big sagebrush, antelope bitterbrush, and woods rose. The dominate browse is mountain big sagebrush, which provides on average 54% of the browse cover. Serviceberry, black sagebrush, bitterbrush, and mountain snowberry are intermixed with the sagebrush. The mountain big sagebrush population is currently ('01) estimated at 3,180 plants/acre, 82% of which are mature. Utilization was light to moderate in 1996 and light in 2001. Percent decadency is low and vigor is good. There is a high number of dead sagebrush along the first 200 feet of the baseline which appear to have died several years ago, probably during the severe winter of 1983-84. Annual leader growth for the preferred shrubs was measured during the sampling period in 2001. Compared to the average for the management unit, both mountain big sagebrush and bitterbrush were well below their respective averages (about 3/4 of an inch for mountain big sagebrush and 1.1 inches for bitterbrush).

Serviceberry displays moderate to heavy use. Percent decadency was moderately high at 41% in 1996. It dropped to 7% in 2001. The serviceberry provides on average about 7% of the browse cover. Antelope bitterbrush also occur in relatively small numbers (440 plants/acre and 5% of the browse cover) but provides preferred forage. Utilization of these shrubs was moderate to heavy in 1996 and 2001. Percent decadency has decreased from 33% down to 18%. Only 5% of the population was classified with poor vigor in 2001.

Some black sagebrush occurs in patches along belts 3 and 4 with a current ('01) estimated density of 2,200 plants/acre. They provide 11% of the browse cover. Less preferred browse include: rubber rabbitbrush, mountain low rabbitbrush, creeping barberry, snowberry, and gray horsebrush.

The herbaceous understory is diverse and well developed. Eleven species of perennial grass currently produce over 20% cover. The dominant species include thickspike wheatgrass, Kentucky bluegrass, and Sandberg bluegrass. Forbs are extremely diverse with 41 species producing 15% cover. Several useful species occur including: paintbrush, silvery lupine, lambstongue groundsel, sulfur eriogonum, and Penstemon.

1996 APPARENT TREND ASSESSMENT

Protective ground cover is excellent for soil protection. Vegetation and litter cover are abundant and well distributed and no significant erosion appears to be occurring. Trend for the key browse species (serviceberry, mountain big sagebrush, black sagebrush, and antelope bitterbrush) appears stable for the most

part. Extremely heavy use of serviceberry and bitterbrush are cause for concern. Percent decadency is 41% for serviceberry, but no dead plants were encountered. Some plants near the site have grown out of reach to browsing animals. Bitterbrush has a percent decadency of 33% and heavy use on 48% of the shrubs. Young plants are present for both species but no seedlings were encountered. The herbaceous understory is diverse and abundant. The sod forming thickspike wheatgrass and Kentucky bluegrass may increase in the future.

2001 TREND ASSESSMENT

The protective ground cover remains excellent. The ratio of bare soil to protective cover has improved since 1996. Trend for soil remains stable. The five preferred browse species for the site make up on average 92% of the total browse cover. Of the five species, only mountain big sagebrush showed a slight downward trend, while the others showed trends that were stable to slightly upward. The overall trend for browse is stable. The herbaceous understory continues to be diverse and abundant. The sum of nested frequency for perennial grasses show a slight increase, while the sum of nested frequency of perennial forbs indicates a decrease. The grasses make up over 60% of the herbaceous cover, therefor the overall trend for the herbaceous understory is stable.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 01 , Study no: 17

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'96	'01	'96	'01	'96	'01
G	Agropyron dasystachyum	279	299	72	82	6.03	7.03
G	Agropyron spicatum	46	*24	16	9	1.37	1.22
G	Bromus tectorum (a)	17	25	7	7	.06	.06
G	Carex spp.	52	*33	16	7	1.12	1.19
G	Elymus cinereus	-	4	-	1	-	.98
G	Koeleria cristata	4	9	2	4	.06	.21
G	Melica bulbosa	4	5	3	3	.04	.06
G	Poa bulbosa	-	2	-	1	-	.03
G	Poa fendleriana	6	14	4	5	.16	.35
G	Poa pratensis	49	*159	12	48	1.04	5.79
G	Poa secunda	216	*148	63	53	4.51	3.81
Total for Annual Grasses		17	25	7	7	0.06	0.06
Total for Perennial Grasses		656	697	188	213	14.36	20.69
Total for Grasses		673	722	195	220	14.42	20.75

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'96	'01	'96	'01	'96	'01
F	Achillea millefolium	62	53	21	21	.57	.79
F	Agoseris glauca	112	*48	41	21	.69	.40
F	Allium spp.	22	*92	13	37	.06	.42
F	Antennaria rosea	-	1	-	1	-	.03
F	Arabis spp.	8	-	4	-	.02	-
F	Astragalus beckwithii	1	3	1	2	.03	.04
F	Astragalus cibarius	8	18	5	7	.39	.08
F	Astragalus convallarius	-	2	-	1	-	.15
F	Aster spp.	178	192	57	56	2.19	5.29
F	Astragalus spp.	5	-	2	-	.06	-
F	Castilleja linariaefolia	1	6	1	2	.03	.30
F	Calochortus nuttallii	4	-	2	-	.01	-
F	Cirsium spp.	3	*11	2	8	.07	.31
F	Collomia linearis (a)	85	*24	30	12	.20	.06
F	Comandra pallida	15	*50	7	18	.06	.66
F	Collinsia parviflora (a)	287	*228	87	66	2.28	2.41
F	Crepis acuminata	3	*8	1	4	.00	.07
F	Crepis intermedia	10	*-	6	-	.05	-
F	Cryptantha spp.	7	-	2	-	.01	-
F	Cymopterus spp.	12	-	3	-	.04	-
F	Cynoglossum officinale	1	-	1	-	.03	-
F	Delphinium nuttallianum	7	17	4	8	.02	.06
F	Delphinium occidentale	2	1	1	1	.03	.00
F	Equisetum spp.	4	3	2	1	.01	.00
F	Eriogonum umbellatum	16	12	5	5	.12	.39
F	Gayophytum ramosissimum (a)	-	*23	-	9	-	.04
F	Geranium spp.	1	1	1	1	.01	.03
F	Gilia spp. (a)	-	1	-	1	-	.00
F	Hackelia patens	10	2	4	2	.04	.03
F	Hymenoxys acaulis	41	35	22	17	.39	.93
F	Lomatium triternatum	2	*16	2	7	.01	.30
F	Lupinus argenteus	4	6	4	4	.19	.40
F	Machaeranthera spp	53	*3	20	1	.10	.00
F	Microsteris gracilis (a)	-	*87	-	32	-	.18
F	Penstemon humilis	7	6	3	3	.01	.16
F	Phlox longifolia	68	75	26	29	.36	.27
F	Polygonum douglasii (a)	9	10	5	4	.02	.02

Type	Species	Nested Frequency '96	Nested Frequency '01	Quadrat Frequency '96	Quadrat Frequency '01	Average Cover % '96	Average Cover % '01
F	Schoencrambe linifolia	-	1	-	1	-	.03
F	Senecio integerrimus	77	*40	29	21	1.19	.62
F	Senecio multilobatus	-	2	-	1	-	.00
F	Taraxacum officinale	30	43	12	22	.16	.21
F	Tragopogon dubius	3	2	3	2	.01	.18
F	Trifolium spp.	-	4	-	1	-	.00
F	Unknown forb-annual (a)	3	-	1	-	.15	-
F	Unknown forb-perennial	32	-	12	-	.22	-
F	Veronica biloba (a)	3	*29	1	11	.03	.13
F	Viguiera multiflora	70	*3	29	1	.14	.03
F	Viola spp.	15	*6	7	2	.35	.01
F	Wyethia amplexicaulis	4	3	2	2	.18	.18
F	Zigadenus paniculatus	14	12	8	6	.12	.23
Total for Annual Forbs		387	402	124	135	2.69	2.85
Total for Perennial Forbs		912	777	365	316	8.04	12.67
Total for Forbs		1299	1179	489	451	10.73	15.53

* Indicates significant difference at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 01 , Study no: 17

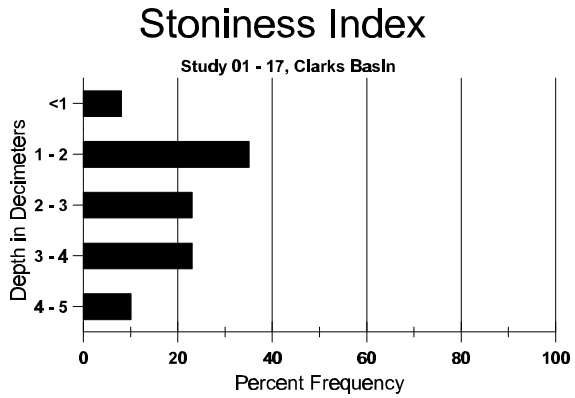
Type	Species	Strip Frequency '96	Strip Frequency '01	Average Cover % '96	Average Cover % '01
B	Amelanchier utahensis	16	15	1.56	2.82
B	Artemisia nova	16	21	3.40	4.13
B	Artemisia tridentata vaseyana	76	73	17.25	20.02
B	Chrysothamnus nauseosus	2	3	-	.03
B	Chrysothamnus viscidiflorus lanceolatus	38	39	1.82	1.41
B	Mahonia repens	3	8	.01	.87
B	Purshia tridentata	18	19	1.07	1.78
B	Rosa woodsii	10	12	.51	.87
B	Symphoricarpos oreophilus	58	56	6.44	4.87
B	Tetradymia canescens	3	3	-	.38
Total for Browse		240	249	32.10	37.22

BASIC COVER --
Herd unit 01 , Study no: 17

Cover Type	Nested Frequency		Average Cover %	
	'96	'01	'96	'01
Vegetation	478	474	55.89	68.40
Rock	161	97	2.41	2.63
Pavement	187	154	2.48	2.58
Litter	495	466	52.18	51.50
Cryptogams	26	13	.31	.22
Bare Ground	263	190	9.58	7.31

SOIL ANALYSIS DATA --
Herd Unit 01, Study no: 17, Clarks Basin

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
20.5	50.0 (19.7)	6.8	31.7	35	33.3	3.3	24.2	553.6	.5



PELLET GROUP FREQUENCY --
Herd unit 01 , Study no: 17

Type	Quadrat Frequency		Pellet Transect	
	'96	'01	Pellet Groups per Acre ⁄01	Days Use per Acre (ha) ⁄01
Rabbit	2	1	44	N/A
Deer	4	10	444	34 (84)
Cattle	6	2	26	2 (5)
Sheep	-	-	17	N/A

BROWSE CHARACTERISTICS --
Herd unit 01 , Study no: 17

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier utahensis																		
Y	96	1	3	-	-	-	-	-	-	-	4	-	-	-	80			4
	01	3	-	-	-	-	-	1	-	-	4	-	-	-	80			4
M	96	1	2	2	-	1	-	-	-	-	6	-	-	-	120	27	32	6
	01	2	3	1	-	1	2	1	-	-	10	-	-	-	200	34	39	10
D	96	-	-	1	1	5	-	-	-	-	4	-	-	3	140			7
	01	-	-	1	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	65%	18%	18%	-12%
'01	27%	27%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	340	Dec:		41%
'01	300			7%

Artemisia nova																		
S	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	12	-	-	-	-	-	-	-	-	12	-	-	-	240			12
Y	96	-	4	-	-	-	-	-	-	-	4	-	-	-	80			4
	01	6	-	-	-	-	-	-	-	-	6	-	-	-	120			6
M	96	8	51	11	2	-	-	-	-	-	72	-	-	-	1440	9	19	72
	01	94	-	-	2	-	-	-	-	-	96	-	-	-	1920	8	18	96
D	96	-	1	-	1	-	-	-	-	-	-	-	-	2	40			2
	01	8	-	-	-	-	-	-	-	-	4	-	-	4	160			8
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	80			4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	72%	14%	03%	+29%
'01	00%	00%	04%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	1560	Dec:		3%
'01	2200			7%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	96	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
	01	15	-	-	-	-	-	-	-	-	15	-	-	-	300			15
Y	96	12	3	-	-	-	-	-	-	-	15	-	-	-	300			15
	01	15	-	-	-	-	-	-	-	-	15	-	-	-	300			15
M	96	111	41	1	3	-	-	-	-	-	156	-	-	-	3120	20	30	156
	01	128	1	1	-	-	-	1	-	-	127	2	2	-	2620	22	33	131
D	96	1	-	-	2	1	-	-	-	-	3	-	-	1	80			4
	01	12	-	-	1	-	-	-	-	-	10	1	1	1	260			13
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	640			32
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	280			14

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	26%	.57%	.57%	- 9%
'01	.62%	.62%	03%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	3500	Dec:		2%
'01	3180			8%

Chrysothamnus nauseosus																		
Y	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	1	-	-	-	-	-	-	1	-	-	-	20			1
M	96	-	-	1	-	-	-	-	-	-	1	-	-	-	20	15	19	1
	01	3	-	-	-	-	-	-	-	-	3	-	-	-	60	20	21	3
D	96	-	1	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	50%	50%	00%	+50%
'01	00%	25%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	40	Dec:		50%
'01	80			0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus lanceolatus																		
S	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	96	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
	01	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	96	51	10	-	6	1	-	-	-	-	68	-	-	-	1360	13	18	68
	01	55	-	-	5	-	-	3	-	-	63	-	-	-	1260	12	15	63
D	96	1	4	-	-	-	-	-	-	-	5	-	-	-	100			5
	01	5	-	-	3	-	-	-	-	-	8	-	-	-	160			8
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	19%	00%	00%	- 5%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	1600	Dec:		6%
'01	1520			11%

Mahonia repens																		
Y	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	18	-	-	-	-	-	-	-	-	18	-	-	-	360			18
M	96	-	-	-	5	-	-	-	-	-	5	-	-	-	100	3	4	5
	01	69	-	-	4	-	-	-	-	-	73	-	-	-	1460	6	7	73

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	00%	00%	00%	+95%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	100	Dec:		-
'01	1820			-

Purshia tridentata																		
Y	96	-	1	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	4	-	-	-	-	-	-	-	4	-	-	-	80			4
M	96	-	4	1	1	1	5	-	-	1	13	-	-	-	260	17	28	13
	01	4	3	3	-	1	3	-	-	-	14	-	-	-	280	19	40	14
D	96	-	-	2	2	2	-	-	-	1	4	-	-	3	140			7
	01	-	-	2	-	-	2	-	-	-	3	-	-	1	80			4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	38%	48%	14%	+ 5%
'01	36%	45%	05%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	420	Dec:		33%
'01	440			18%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Ribes spp.																		
M	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	11	26	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing			Moderate Use			Heavy Use			Poor Vigor						%Change			
		'96				00%			00%									
		'01				00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)													'96		0	Dec:		-
													'01		0			-
Rosa woodsii																		
Y	96	26	-	-	-	-	-	-	-	-	26	-	-	-	520			26
	01	22	-	-	-	-	-	2	-	-	24	-	-	-	480			24
M	96	10	-	-	3	-	-	-	-	-	13	-	-	-	260	19	17	13
	01	19	-	-	5	-	-	3	-	-	27	-	-	-	540	15	13	27
% Plants Showing			Moderate Use			Heavy Use			Poor Vigor						%Change			
		'96				00%			00%						+24%			
		'01				00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)													'96		780	Dec:		-
													'01		1020			-
Symphoricarpos oreophilus																		
S	96	8	-	-	1	-	-	1	-	-	10	-	-	-	200			10
	01	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	96	29	2	-	5	-	-	-	-	-	36	-	-	-	720			36
	01	12	-	-	3	-	-	-	-	-	15	-	-	-	300			15
M	96	71	22	2	10	-	-	-	-	-	105	-	-	-	2100	16	27	105
	01	55	1	-	16	-	-	6	-	-	77	1	-	-	1560	14	26	78
D	96	2	1	-	2	-	-	-	-	-	4	-	-	1	100			5
	01	9	-	-	1	-	-	-	-	-	4	-	-	6	200			10
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3
% Plants Showing			Moderate Use			Heavy Use			Poor Vigor						%Change			
		'96				17%			01%						-29%			
		'01				.97%			00%									
									.68%									
									06%									
Total Plants/Acre (excluding Dead & Seedlings)													'96		2920	Dec:		3%
													'01		2060			10%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Tetradymia canescens																		
Y	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	96	2	3	-	-	-	-	-	-	-	5	-	-	-	100	15	18	5
	01	3	-	-	-	-	-	-	-	-	3	-	-	-	60	10	12	3
D	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	2	-	-	-	-	-	-	-	-	1	-	-	1	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	60%	00%	00%	+29%
'01	00%	00%	14%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'96	100	Dec:	0%
	'01	140		29%